AUG 7 2000

K001767

SUMMARY OF SAFETY AND EFFECTIVENESS

Performance Characteristics

A. Comparison Testing

A total of five hundred and eleven sera were tested for the presence of CMV IgM antibodies using the Diamedix Is-CMV IgM Capture Test Kit and other legally marketed tests at two independent sites (site #1, California and site #2, New York) as well as at Diamedix Corp., Miami, FL (site #3). At site #3 testing was performed both manually and using the MAGO Plus Automated EIA Processor.

Site #1, a large commercial laboratory in California, not affiliated with the manufacturer, tested 167 samples. These samples consisted of 124 fresh samples submitted to the laboratory for CMV IgM testing and 43 frozen samples which had previously tested positive for CMV IgM antibodies. Samples came from a wide variety of geographic locations and from patients with ages ranging from 4 days to 74 years old. For the fresh samples, 35 were from males and 87 from females. The remaining 2 samples were not identified as regards gender. TABLE 1 compares the results obtained for the Is-CMV IgM Capture Test Kit and their currently used IFA testing method.

Site #2, a commercial reference laboratory in New York, not affiliated with the manufacturer, tested 130 samples. These samples consisted of 50 fresh samples and 65 frozen samples submitted to the laboratory for CMV IgM testing as well as 15 frozen samples procured from a vendor based on their positive serostatus. Samples were obtained from various geographic regions. Sixty-six samples were from males and 64 from females. Ages of patients ranged from 1 day old to 77 years old. TABLE 2 compares the results obtained for the Is-CMV IgM Capture Test Kit and their currently used EIA testing method.

TABLE 1

Is-CMV IgM Capture - Site #1

		Positive	Negative	Equivocal
IFA	Positive	43	3	2
	Negative	4	110	5
	*Equivocal	0	0	0

*95% CI***

Overall Agreement 153/160 = 95.6% 91.2 to 98.2

TABLE 2

Is-CMV IgM Capture- Site #2

		Positive	Negative	Equivocal
Other EIA	Positive	17	4	2
	Negative	1	106	0
	*Equivocal	0	0	0

*95% CI***

Overall Agreement 123/128 = 96.1% 91.1 to 98.7

* Equivocal results were excluded from calculations

** 95% Confidence Intervals (CI) calculated by the Exact Method.

For Site #1, further resolution of the discordant samples was performed by testing such samples using referee EIA methods. The three samples negative by the Is-CMV IgM Capture Test Kit and positive by IFA were also negative in a referee capture EIA method. Of the four samples that were positive in the Is-CMV IgM Capture Test Kit and negative by IFA, only three were available for additional testing. These were negative using a referee capture EIA method.

For Site #2, further resolution of the discordant samples was performed in a similar manner. The four samples that were negative in the Is-CMV IgM Capture Test Kit and positive by the other EIA were also negative in the referee capture EIA method. The sample that was positive in the Is-CMV IgM Capture Test Kit and negative in the other EIA was also positive in the referee capture EIA method.

REV.

Site #3 (Diamedix Corp.) tested 214 samples (all frozen) by both the manual and the automated method. Of these samples, 111 were from normal blood donors. Thirty-eight samples were obtained from pregnant, transplants or AIDS patients and, where possible, were either classified as having a primary infection or a reactivation. Twenty-six samples were multiple bleeds that had positive IFA titers. The remaining samples were obtained from serum vendors based on their serostatus. TABLES 3 and 4 compare the results obtained for the Is-CMV IgM Capture Test Kit and another marketed capture EIA method.

TABLE 3

Is-CMV IgM Capture - Site #3 : Manual

Other EIA	Positive	Negative	Equivocal
Positive	76	7	2
Negative	1	120	1
*Equivocal	1	5	1

Overall Agreement 196/204 = 96.1% *95% CI*** 92.4-98.3

TABLE 4

Is-CMV IgM Capture - Site #3 : MAGO Plus

	Positive	Negative	Equivocal
Positive	73	8	4
Negative	0	118	4
*Equivocal	3	4	0

Overall Agreement 191/199 = 96.0 % *95% CI*** 92.2-98.2

* Equivocal results were excluded from calculations

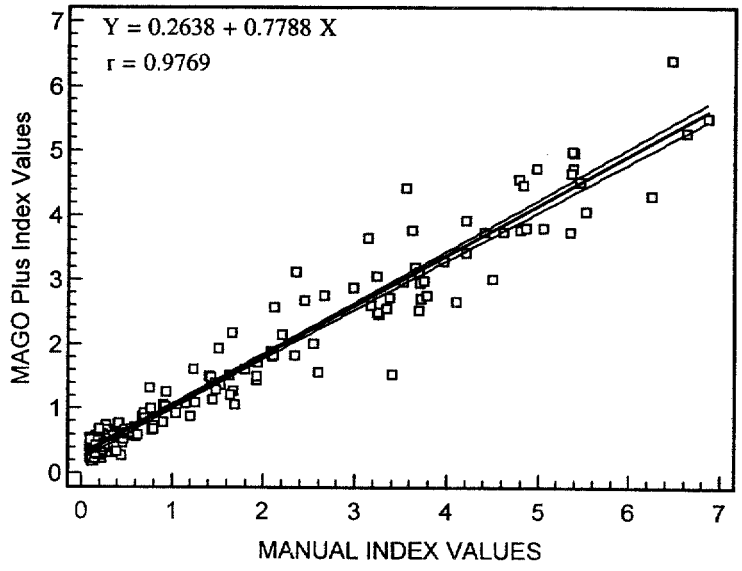
** 95% Confidence Intervals (CI) calculated by the Exact Method.

For Site #3 (manual testing), further resolution of the discordant sera revealed that of the 7 sera negative in the Is-CMV IgM Capture Test Kit but positive in the other EIA, 4 were negative and 3 were positive by a referee capture EIA method. The serum that was positive in the Is-CMV IgM Capture Test Kit and negative in the other EIA was negative by the referee method. For MAGO Plus testing, of the 8 sera that were negative in the Is-CMV IgM Capture Test Kit but positive in the other EIA, 5 were negative and 3 were low positive by the referee capture EIA method.

B. Correlation of Manual and MAGO Plus Results

The Is-CMV IgM Capture Test Kit has been developed for automated as well as manual use. To demonstrate the equivalence of the manual and MAGO Plus Procedures, the results of the 214 serum samples tested above were compared. A scattergram and regression line of the results obtained with 95% confidence intervals is shown in FIGURE 1.

FIGURE 1 : Manual vs MAGO Plus Correlation



C. Cross Reactivity/Interference Studies

The specificity of the Is-CMV IgM Capture Test Kit was verified by testing a number of sera containing relatively high levels of IgM antibody to other viruses as determined using commercially available test kits. These included other herpesviruses. A total of 40 known IgM-positive sera were tested. In addition, the effects of potential interference from rheumatoid factor (RF), anti-nuclear antibody (ANA), viral-specific IgG and heterophile antibodies were assessed by testing an additional 30 sera. These data are shown in TABLE 5. TABLE 6 shows the lack of interference in samples containing high levels of IgG antibodies and low levels of IgM antibodies before and after removal of the IgG-class antibodies.

TABLE 5

Specificity	# of Positive Samples	# Positive in Is-CMV IgM Capture
EBV IgM	8	0
Lyme IgM	3	0
HSV IgM	15	0
VZV IgM	4	0
Rubella IgM	5	0
Toxoplasma IgM	5	0
Heterophile Antibody	4	0
RF	5	0
ANA	10	0
CMV IgG	11	0

TABLE 6

Sample #	Before IgG Removal		After IgG removal	
	IgG Index	IgM Index	IgG Index	IgM Index
1	11.55	3.99	0.72	3.95
2	21.64	2.68	0.80	2.55
3	7.21	1.57	0.32	1.42
4	9.21	1.82	0.00	1.41
5	14.04	2.03	0.00	1.85
6	4.28	1.66	0.10	1.67
7	12.52	2.02	0.00	1.40
8	8.71	2.06	0.53	2.42
9	7.05	1.93	0.04	1.75
10	6.47	1.97	0.64	1.71

IgG Pos > 1.0 IgM Pos ≥ 1.10

D. Verification of IgM Specificity

To confirm that the Is-CMV IgM Capture test Kit specifically detects IgM-class antibodies, 15 samples with moderate to high levels of CMV IgM antibodies were selected for testing. These samples were treated with dithiothreitol (DTT) to destroy the IgM and were then retested in the Is-CMV IgM Capture Test Kit. The results in TABLE 7 show that these samples were rendered negative following treatment with DTT confirming the specificity of the Is-CMV IgM test Kit for detecting IgM-class antibodies.

TABLE 7

Sample #	Untreated Is-CMV IgM Capture Index	Untreated Is-CMV IgM Capture Interp	Treated with DTT Is-CMV IgM Capture Index	Treated with DTT Is-CMV IgM Capture Interp
1	2.068	POS	0.213	NEG
2	3.377	POS	0.214	NEG
3	4.860	POS	0.476	NEG
4	4.064	POS	0.574	NEG
5	1.371	POS	0.242	NEG
6	3.086	POS	0.182	NEG
7	1.499	POS	0.240	NEG
8	2.296	POS	0.385	NEG
9	3.073	POS	0.356	NEG
10	2.738	POS	0.501	NEG
11	1.902	POS	0.277	NEG
12	2.755	POS	0.304	NEG
13	1.775	POS	0.240	NEG
14	1.302	POS	0.209	NEG
15	3.229	POS	0.229	NEG

E. Precision

Six serum samples, as well as the kit Controls, were tested to assess the precision of the Is-CMV IgM Capture Test Kit. Sites #1 and #2 tested samples in triplicate in three separate runs on three different days. Site #3 (Diamedix Corp.) tested samples in triplicate in two separate runs on three different days both manually and using the MAGO Plus Automated EIA Processor. The results obtained are shown in TABLES 8-11.

TABLE 8 : Site #1- Intra-Assay and Interassay Precision

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=9)		
	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%
C1	0.198	0.006	3.03	0.247	0.023	9.31	0.271	0.018	6.64	0.239	0.036	15.06
C2	0.213	0.003	1.41	0.270	0.007	2.59	0.290	0.021	7.24	0.258	0.036	13.95
C3	1.433	0.005	0.35	1.548	0.021	1.36	1.692	0.031	1.83	1.558	0.114	7.32
C4	1.839	0.032	1.74	1.979	0.031	1.57	2.269	0.043	1.90	2.029	0.192	9.46
C5	3.148	0.044	1.40	3.275	0.218	6.66	3.519	0.027	0.77	3.314	0.198	5.97
C6	3.772	0.032	0.85	4.065	0.109	2.68	4.305	0.064	1.49	4.047	0.240	5.93
LPC	1.363	0.031	2.27	1.545	0.011	0.71	1.612	0.041	2.54	1.507	0.115	7.63
NC	0.181	0.010	5.52	0.222	0.022	9.91	0.224	0.035	15.63	0.209	0.030	14.35

TABLE 9 : Site #2 - Intra-Assay and Interassay Precision

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=9)		
	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%
C1	0.192	0.052	27.08	0.226	0.018	7.96	0.330	0.030	9.09	0.249	0.070	28.11
C2	0.171	0.058	33.92	0.213	0.006	2.82	0.345	0.058	16.81	0.243	0.088	36.21
C3	1.339	0.032	2.39	1.513	0.088	5.82	1.536	0.029	1.89	1.463	0.105	7.18
C4	1.881	0.092	4.89	2.117	0.046	2.17	1.971	0.104	5.28	1.989	0.127	6.39
C5	3.168	0.070	2.21	3.239	0.111	3.43	3.115	0.068	2.18	3.174	0.091	2.87
C6	3.589	0.201	5.60	3.731	0.060	1.61	3.543	0.118	3.33	3.621	0.147	4.06
CAL	0.988	0.073	7.39	0.928	0.043	4.63	0.975	0.041	4.21	0.964	0.055	5.71
LPC	1.570	0.037	2.36	1.512	0.034	2.25	1.462	0.060	4.10	1.515	0.061	4.03
NC	0.243	0.059	24.28	0.172	0.019	11.05	0.351	0.070	19.94	0.255	0.091	35.69

TABLE 10 : Site #3-Intra-Assay and Interassay Precision (Manual)

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=18)		
	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%
A	0.254	0.019	7.48	0.296	0.088	29.73	0.317	0.059	18.61	0.289	0.065	22.49
B	0.300	0.089	29.67	0.258	0.031	12.02	0.258	0.091	35.27	0.272	0.074	27.21
C	1.640	0.028	1.71	1.589	0.076	4.78	1.625	0.074	4.55	1.618	0.063	3.89
D	2.456	0.144	5.86	2.008	0.214	10.66	1.854	0.429	23.14	2.191	0.291	13.28
E	4.056	0.167	4.12	3.480	0.479	13.76	2.344	0.539	22.99	3.671	0.437	11.90
F	5.110	0.336	6.58	4.309	0.637	14.78	3.479	0.356	10.23	4.613	0.618	13.40
c/o CAL	1.122	0.078	6.95	0.938	0.147	15.67	0.955	0.150	15.71	1.005	0.148	14.73
LPC	1.866	0.121	6.48	1.514	0.180	11.89	1.636	0.264	16.14	1.672	0.238	14.23
NC	0.283	0.051	18.02	0.221	0.027	12.22	0.286	0.126	44.06	0.263	0.081	30.80

TABLE 11 : Site #3- Intra-assay and Interassay Precision (MAGO Plus)

SERUM	INTRA-ASSAY DAY 1			INTRA-ASSAY DAY 2			INTRA-ASSAY DAY 3			INTERASSAY (n=18)		
	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%	MEAN INDEX	SD	CV%
A	0.40	0.104	26.00	0.29	0.071	24.48	0.36	0.078	21.67	0.35	0.094	27.09
B	0.60	0.172	28.67	0.45	0.069	15.33	0.46	0.142	30.87	0.50	0.145	28.83
C	1.80	0.125	6.94	1.53	0.096	6.27	1.42	0.104	7.32	1.58	0.193	12.19
D	2.70	0.266	9.85	2.43	0.430	17.70	2.36	0.413	17.50	2.50	0.386	15.46
E	4.50	0.241	5.36	3.46	0.197	5.69	3.33	0.232	6.97	3.76	0.577	15.33
F	5.53	0.477	8.63	4.46	0.636	14.26	4.33	0.575	13.28	4.77	0.766	16.05
c/o CAL	1.17	0.161	13.76	1.04	0.141	13.56	1.13	0.148	13.10	1.14	0.155	13.58
LPC	1.34	0.217	16.19	1.77	0.334	18.87	1.67	0.335	20.06	1.84	0.395	21.43
NC	0.48	0.203	42.29	0.40	0.117	29.25	0.39	0.081	9.00	0.42	0.141	33.49

Expected Values

The prevalence of CMV infection can vary depending on a number of factors such as age, gender, geographical location, socio-economic status, race, type of test used, specimen collection and handling procedures, and clinical and epidemiological history of individual patients. In the present study two hundred sera from S. Florida blood donors were evaluated in the Is-CMV IgM Capture test kit. Of these samples one hundred and ninety-four (97%) were negative, two (1%) were positive and four (2%) were equivocal for CMV IgM antibodies. TABLE 12 shows the age and prevalence profile of this population. FIGURE 2 shows a histogram showing the distribution of Index values obtained. The distribution of Index values ina positive population tested by Diamedix is shown in FIGURE 3.

FIGURE 2

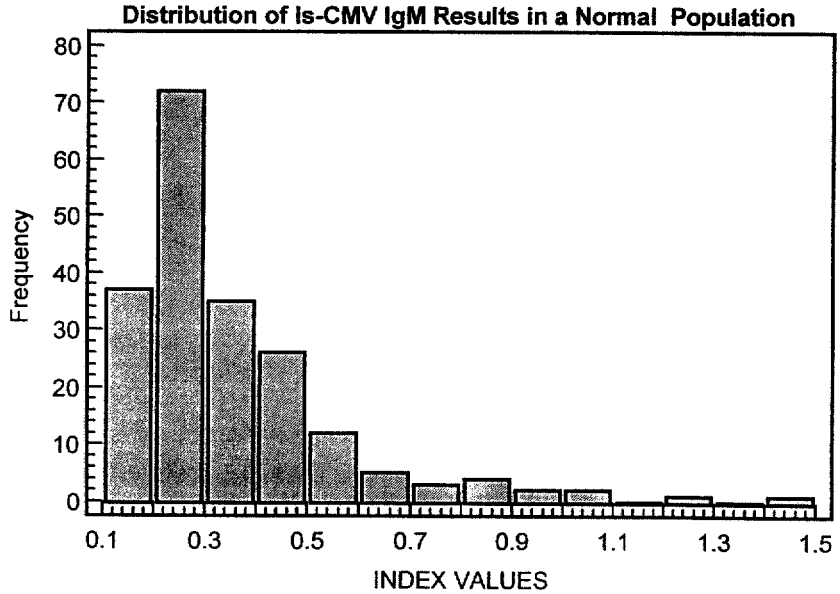


FIGURE 3

Distribution of Is-CMV IgM Results in a Positive Population

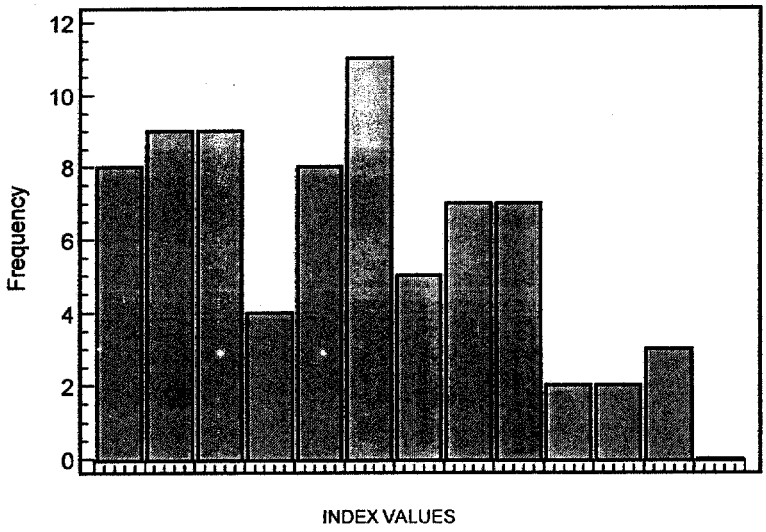


TABLE 12

Age Distribution and Prevalence of anti-CMV IgM in a Normal S. Florida Population

	Number of Donors	% Seronegative	% Seropositive	% Equivocal
Total Number	200	97.0% (194)	1.0% (2)	2.0% (4)
Geographic Location:				
S. Florida	200			
Age				
10-19	18	100.0% (18)	0.0% (0)	0.0% (0)
20-29	47	97.9% (44)	4.3% (2)	2.1% (1)
30-39	74	100.0% (73)	0.0% (0)	1.4% (1)
40-49	40	97.5% (39)	0.0% (0)	2.5% (1)
50-59	11	100.0% (10)	0.0% (0)	9.0% (1)
60-69	9	100.0% (9)	0.0% (0)	0.0% (0)
>70	1	100.0% (1)	0.0% (0)	0.0% (0)
Gender				
Male	98	97.0% (97)	1.0% (1)	2.0% (2)
Females	102	97.0% (97)	1.0% (1)	2.0% (2)

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

AUG 7 2000

Lynne Stirling, Ph.D.
Vice President of Quality Unit/Regulatory Affairs
Diamedix Corporation
2140 North Miami Avenue
Miami, Florida 33127

Re: K001767
Trade Name: Is-CMV IgM Capture Test System
Regulatory Class: II
Product Code: LJO
Dated: July 11, 2000
Received: July 12, 2000

Dear Dr. Stirling:

We have reviewed your Section 510(k) notification of intent to market the device referenced above and we have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (Premarket Approval), it may be subject to such additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 895. A substantially equivalent determination assumes compliance with the Current Good Manufacturing Practice requirements, as set forth in the Quality System Regulation (QS) for Medical Devices: General regulation (21 CFR Part 820) and that, through periodic QS inspections, the Food and Drug Administration (FDA) will verify such assumptions. Failure to comply with the GMP regulation may result in regulatory action. In addition, FDA may publish further announcements concerning your device in the Federal Register. Please note: this response to your premarket notification submission does not affect any obligation you might have under sections 531 through 542 of the Act for devices under the Electronic Product Radiation Control provisions, or other Federal laws or regulations.

This letter will allow you to begin marketing your device as described in your 510(k) premarket notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801 and additionally 809.10 for in vitro diagnostic devices), please contact the Office of Compliance at (301) 594-4588. Additionally, for questions on the promotion and advertising of your device, please contact the Office of Compliance at (301) 594-4639. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR 807.97). Other general information on your responsibilities under the Act may be obtained from the Division of Small Manufacturers Assistance at its toll-free number (800) 638-2041 or (301) 443-6597 or at its internet address "http://www.fda.gov/cdrh/dsma/dsmamain.html".

Sincerely yours,

Steven Gutman

Steven I. Gutman, M.D., M.B.A.
Director
Division of Clinical Laboratory Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

Appendix G. Indications for Use Statement

INDICATIONS FOR USE STATEMENT

510(K) NUMBER : K001767

DEVICE NAME : Is-CMV IgM Capture Test System

Indications for Use : The Diamedix Is-CMV IgM Capture Test Kit is a capture enzyme immunonassay (EIA) for the qualitative detection of IgM antibodies to CMV in human serum as an aid in the diagnosis of recent or current infection with CMV. These reagents can be used either manually or in conjunction with the MAGO® Plus Automated EIA Processor. This product has not been cleared/approved by the FDA for blood/plasma donor screening.

Woodey Dubois

(Division Sign-Off)
Division of Clinical Laboratory Devices
510(k) Number K001767

Prescription Use X